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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,611	10/24/2003	Paul Anthony Jacobs	9052-176	6485
20792	7590	04/27/2005	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			MULLEN, THOMAS J	
PO BOX 37428				
RALEIGH, NC 27627			ART UNIT	PAPER NUMBER
			2632	

DATE MAILED: 04/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/693,611

Applicant(s)

JACOBS ET AL.

Examiner

Thomas J. Mullen, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 10 and 11 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/3/04</u> . | 6) <input type="checkbox"/> Other: ____  |

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1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

A suggested title is "Intelligent Sealing Device and Method" (note the discussion in the specification of the sealing device or system as "intelligent", e.g. at page 12, line 28; regarding "...and Method", the claims include both "device" claims and "method" claims).

3. The disclosure is objected to because of the following informalities:

Abstract page, line 5, "sensorw" should be --sensors--;

Abstract page, line 6, "dealing" should be --sealing--;

page 4, line 7, it appears that "Figure 3" should be --Figure 2--;

page 4, line 9, it appears that "Figure 2" should be --Figure 3--;

page 6, line 7, it appears that after "physical" should be inserted --attachment--;

page 6, line 16, it appears that "poles" should be --polls--;

page 7, line 9, it appears that after "physical" should be inserted --attachment--;

page 7, line 29, it appears that "poles" should be --polls--;

page 9, line 12, it appears that "poles" should be --polls--;

page 13, line 13, it appears that "bluetooth" should be --Bluetooth--;

page 13, line 16, it appears that after "unit" should be inserted --of the--;

page 13, line 21, "antennae" should be either --antenna-- or --antennas-- (i.e., the term "antennae" is the plural form of "antenna" only in the context of "sensory appendages on the head of an insect, myriapod, or crustacean", and not in the context of sending and receiving electromagnetic waves--American Heritage Dictionary, 2nd Coll. Ed.);

page 13, line 28, it appears that "also" should be deleted (see the discussion in paragraph 4 below regarding the occurrence of reference numeral 119 in Fig. 12);

page 13, line 29, it appears that "119" should be --117-- (see above);

page 14, line 19, "antennae" should be either --antenna-- or --antennas--;

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page 15, line 2, it appears that "elongating" would be clearer as --prolonging--, in the context of the sentence;

page 15, line 9, "sensored" does not appear to be a word;

page 15, line 12, "antennae" should be either --antenna-- or --antennas--;

page 16, line 11, "electronics is" should be --electronics are--; and

page 16, line 17, "sensing" does not appear to be a word.

Appropriate correction is required.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do include the following reference character(s) not mentioned in the description: 302 and 305 (Fig. 1; see page 5, lines 7-10 of the specification), and 126-128 (Fig. 12; see page 14, lines 6-15 of the specification).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign which is mentioned in the description: 171 (see page 16, lines 1 and 4 in the specification; note the unnumbered block near the bottom of Fig. 17).

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "30" has been used to designate both an "RF transmitter" (Figs. 4-6) and a "sealing area" (Fig. 7).

The drawings are objected to because at the bottom of Fig. 12, it appears that reference numeral "119" should be --117-- (i.e., the element being identified is an "earth terminal"--others of which are identified elsewhere in Fig. 12 as 117 or 122--rather than a "user control button", which is shown in Fig. 13A).

The drawings are objected to as failing to provide "descriptive legends" for the variously-shaped blank enclosures (boxes, blocks, etc), as follows:

27-30 in Figs. 4-6; 34-37 in Fig. 7; 50-52 in Fig. 8; 68-70 in Fig. 9;  
86-88 in Fig. 10; 101-106 and 108 in Fig. 11; 112, 114, 115 and 121 in Fig. 12;  
130, and various unnumbered blocks in Fig. 14; and  
(particularly) 160-173 in Fig. 17.

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5. Regarding the various issues raised in paragraph 4 above, corrected drawing sheets in compliance with 37 CFR 1.121(d), and amendment to the specification to add reference character(s) in the description (as applicable) in compliance with 37 CFR 1.121(b), are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. Claim 7 is objected to under 37 CFR 1.75(a) for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7, line 3, "antennae" should be either --antenna-- or --antennas--, as discussed in paragraph 3 above.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

At the end of claim 7, reciting that the remote unit comprises "a display, and/or keypad and remote antennae [sic] or receiver" is vague as to which elements the remote unit does have, might have, has in the alternative, etc.; i.e., the scope of "remote unit" is unclear as to the components thereof. For example, note that if the remote unit has a (wireless) "receiver", it would by necessity also have an "antenna".

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9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 6, 9 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Arbuckle (US 5906374).

Note in Arbuckle, rotating equipment (e.g. pump 10, see Fig. 3); sealing device (dual seal 16 having primary 28 and secondary 30 seals for corresponding fluid chambers 26 and 32, see Figs. 1-3); data storage device (microprocessor 114 or 154 or 200, see Figs. 3, 4, 6 and 8-15); and display (116, 128, 130, 156, 158, 210 and/or 212 in the various figures). Arbuckle discloses a barrier fluid leakage control apparatus 54 and method, using a pressure monitoring and control arrangement 60 to "detect and measure the decrease of the barrier fluid pressure below the preset level", and to "calculate and provide a readout of...the leakage rate" (Abstract). Apparatus 54 includes first and second pressure transducers 120,122 (Fig. 4) for monitoring fluid pressure in flow lines associated with the pump (col. 9, lines 1-4), whose outputs are converted to digital signals and "stored in the memory of the microprocessor 114" (col. 9, lines 47-52); in correspondence therewith, both "average" and "instantaneous" leakage rates are calculated by microprocessor 114 and displayed digitally by displays 128,130 (col. 9, lines 52-58). Alternately, apparatus 54 may include an electronic linear measurement device 148 (Fig. 6) for monitoring "the movement and position of (a) piston 142" associated with the sealing device (col. 10, lines 52-59), such that when "barrier fluid leakage" occurs, the linear measurement device 148 "generates an electrical signal output" which is processed by microprocessor 154 and displays 156,158 (col. 11, lines 7-21). Thus, Arbuckle teaches monitoring the "performance" of a sealing device (16)--i.e., leakage control--by measuring "variable information" via at least one sensor (120,122,148,etc) incorporated in the sealing device, and providing the information to a data storage device (114,154,200), as recited in claims 1 and 13.

Regarding claim 6, the sensor(s) (120,122,148,etc) is/are connected to "an amplifier and/or a micro-controller" (i.e., microprocessor 114 or 154 or 200), which by definition (and as

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identified above with respect to microprocessor 114) includes its own memory or "data storage device".

Regarding claim 9, sensor 148 is a "linear measurement device", as discussed above.

Regarding claim 12, since Arbuckle's system is described as a "control method" (or "control apparatus"), the sensor (120,122,148,etc) and data storage device (114,154,200) in Arbuckle thus inherently provide "feedback control", i.e. "controlling leakage of a barrier fluid" from the dual seal assembly (note that pressure mechanism 56--which is part of control apparatus 54--"maintains the pressure of the barrier fluid at a preset level above the pressure of the process fluid" in response to sensor outputs, see the Abstract and col. 6, lines 61-64).

Regarding claim 14, note "display means" (116, 128, 130, 156, 158, 210 and/or 212), discussed above.

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arbuckle.

Note further in Arbuckle, fluid leakage control "reporting network" 218 (Fig. 17 and col. 18, lines 34-50), wherein pumps 10 (and/or valves 160) at corresponding "nodes" 220 each have a "network interface chip" which enables them to communicate with a "host computer" 222; in particular, "(l)eakage data from each node 220 is collected by the host computer 222 over the network 218 and entered into a database". Thus, as to claims 2 and 4 the "information" stored by the microprocessor (114,154,200) is "remotely accessible" by the host computer 222. Arbuckle fails to teach whether the communication links between the "network interface chip" at each node and the host computer 222 (broadly depicted in Fig. 17) are "wireless" or "non-wireless", as in claims 2 and 4, respectively; however, Arbuckle does teach that the network "can be constructed using several different types of communication media and communication standards". One skilled in the art would have recognized that "different types of communication

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media and communication standards" applicable to Arbuckle would include one or more of the particular "wireless" and "non-wireless" types listed in claims 3 and 5, respectively. Therefore, it would have been obvious for one of ordinary skill to select one or more particular types of "communication media", from among those recited in claims 2-5, for use in the network 218 of Arbuckle.

13. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arbuckle in view of either Japan publication 7-332502, cited by applicant (hereinafter Japan '502) or Nord (US 6003872).

Arbuckle further teaches that linear measurement device 148 may be, e.g., of the "variable resistance type" (col. 10, lines 59-62), but fails to specify that the linear device 148 may be a "strain" measurement device per se (it appears to be inherent that device 148 is, directly or indirectly, "fixed to a component of the sealing device"). However, it is well known in the art of seal monitoring devices to use a strain-type sensing element; for example, Japan '502 teaches using sensors which detect "stress" applied to a mechanical seal (see the translated Abstract and Fig. 1), and Nord teaches using sensors which detect "mechanical-dynamic stresses" applied to a seal (see the Abstract and Fig. 1), Nord further teaching that such sensors may be "piezo-elements" (see col. 4, lines 33-39). In view of either Japan '702 or Nord, it would have been obvious to use a "strain" measurement device per se in Arbuckle (as perhaps the linear measurement device 148 thereof), since strain devices are well known inexpensive sensors capable of providing "variable information" as to a sensed condition.

14. Claims 7, 10 and 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The remaining art cited by applicant has been considered. Pecht et al (US 6626436) and Yamauchi et al (US 5345829) are US equivalents of two of the foreign references cited by



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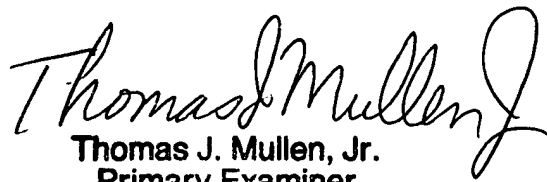
applicant. Lancon et al (US 2004/213319), Kataoka et al (US 5041989) and Miller et al (US 4691276) are cited to further show the state of the art.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mullen, Jr. whose telephone number is 571-272-2965. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu, can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

TJM

  
**Thomas J. Mullen, Jr.**  
**Primary Examiner**  
**Art Unit 2632**